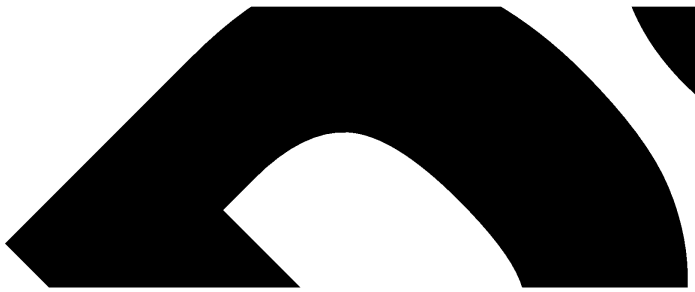


Sanitized Copy Approved for Release 2010/02/02 : CIA-RDP85T00875R00170001

CIA/OER/IM 71-59

DOC/SER

25X1

Secret

DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Communist China: Performance And Prospects In The Coal Industry

Secret

ER IM 71-59
April 1971

Copy No. 38

WARNING

This document contains information affecting the national defense of the United States, within the meaning of Title 18, sections 793 and 794, of the US Code, as amended. Its transmission or revelation of its contents to or receipt by an unauthorized person is prohibited by law.

Sanitized Copy Approved for Release 2010/02/02 : CIA-RDP85T00875R001700010010-8

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
April 1971

INTELLIGENCE MEMORANDUM

Communist China: Performance And Prospects In The Coal Industry

Introduction

1. Coal remains the single most important energy source in Communist China, comprising 90% of all the energy available in 1970. As demonstrated during the Cultural Revolution in 1967-68, disruptions in the production and distribution of coal can lead to reduced production in such key industries as electric power, iron and steel, chemicals, and petroleum refining. Although the petroleum industry is vigorously expanding and although hydroelectric stations are multiplying, coal will continue to play a dominant role in Chinese industrial development throughout the 1970s.

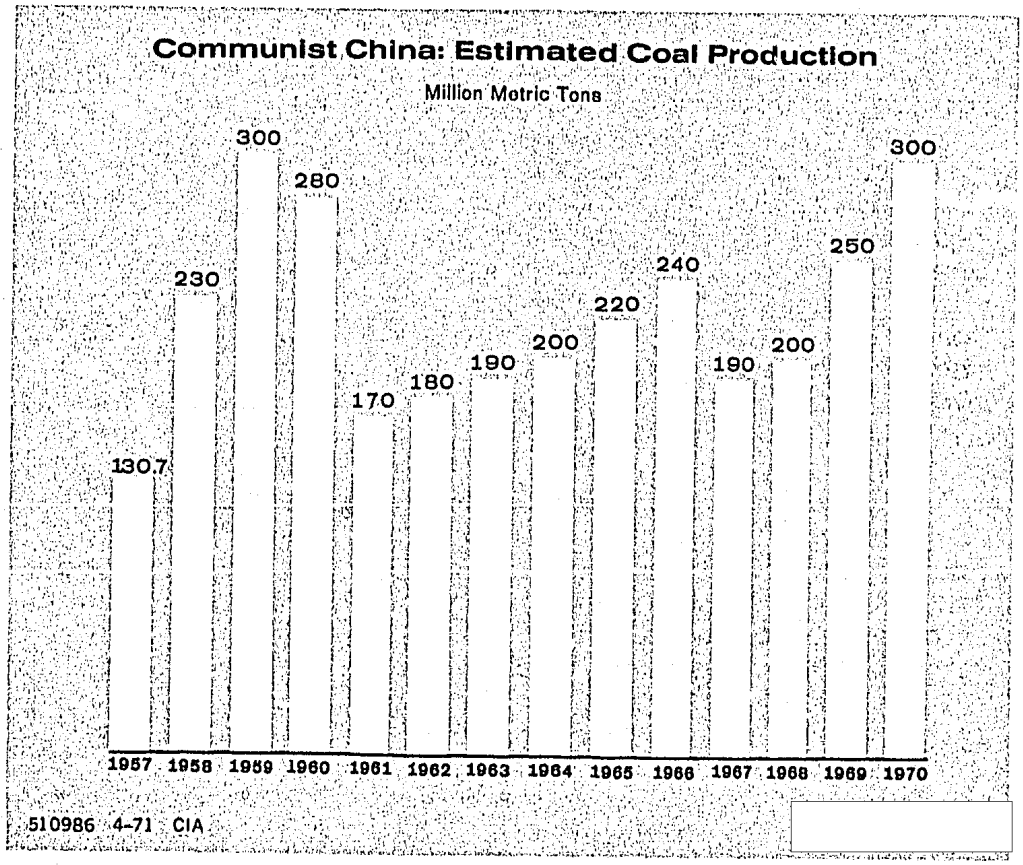
2. This memorandum reviews recent developments in the Chinese coal industry and assesses the prospects for the industry during the period of the new Fourth Five-Year Plan (1971-75). The memorandum distinguishes between (a) the small local mines, generally located in areas of thin coal deposits, which are favored under current economic policy, and (b) the large mining complexes, generally located in the coal-rich industrial provinces of the north, which often rely on foreign equipment and which have a long lead time from the start of construction to actual operation. The Appendix reviews the problem of estimating coal output from the available fragmentary data.

Note: This memorandum was prepared by the Office of Economic Research.

Discussion

Production

3. In 1970, Communist China's coal production regained the previous 1959 peak of 300 mmillion metric tons. After a sharp decline in 1967-68 caused by the upheavals of the Cultural Revolution, coal production in 1969 increased by 50 million tons over the level of 1968* and by a further 50 million tons in 1970 (see Figure 1).



25X1

25X1

4. China's coal industry covers a wide spectrum of facilities ranging from small, labor-intensive mines (Figures 2 and 3) to large, highly mechanized mines (Figures 4 and 5). In their discussions, the Chinese generally refer to two categories of mines -- small and large. In most cases, a small mine is little more than a small open pit, or a shaft, producing less than 1,000 tons of coal a year. However, a few "small" mines may produce as much as 60,000 to 70,000 tons. Large mines, which usually include multiple shafts, produce over 300,000 tons per year. Sometimes the Chinese refer to mines of "medium size." This term can be used to describe mines in the range of 100,000 to 300,000 tons, which frequently are developed into large mines. "Medium" is also used to describe sizable small mines. Since the term is ambiguous, and since mines in China are mostly either small or large, use of the term "medium" is avoided in this memorandum.

5. Mining bureaus, generally consisting of several mines, are classified as large if they produce over 1 million tons a year. These bureaus are located for the most part in the coal-rich northeast which has had years of development. Some large bureaus are also found in east China and around the Shensi and Szechwan Basins. In 1970, large mining bureaus accounted for about 76% of total coal production, with small mines probably accounting for most of the remaining 24%.

6. The large mining bureaus under which the major mines are grouped have been producing at less than capacity since 1961. The bulk of the increase in coal production in 1970-71 has come from more efficient mining procedures and fuller exploitation of coal deposits at the large mining bureaus. Even though the large mining bureaus were producing at less than capacity during the middle 1960s, several dozen new large mines were built as the result of regime policies emphasizing large-scale mine construction. Output from these new mines, which are now coming into full production, was also a significant component of total coal production in 1970. The current Chinese interest in rejuvenating some of the old worked-out mines, previously closed, suggests that

Figure 2. Small Coal Shaft In Tibet

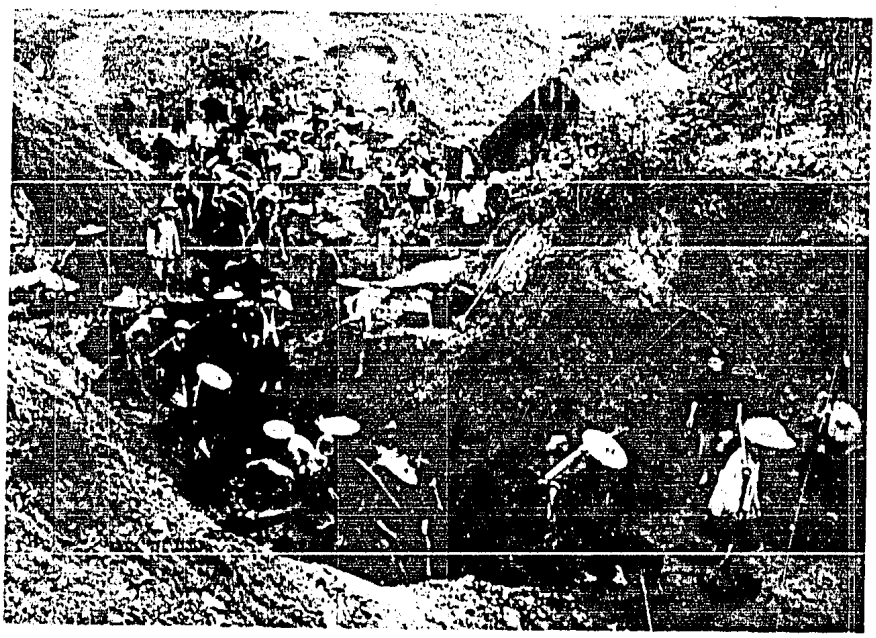


Figure 3. Small Strip Mine In Yi-wu County, Chekiang Province

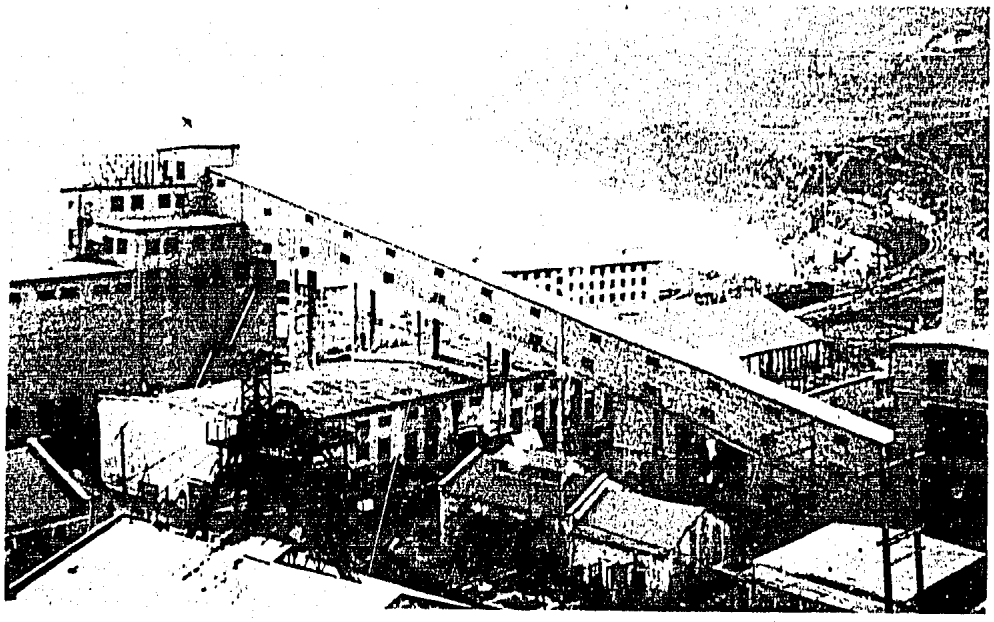


Figure 4. Large Underground Mine In Peking, Hopeh

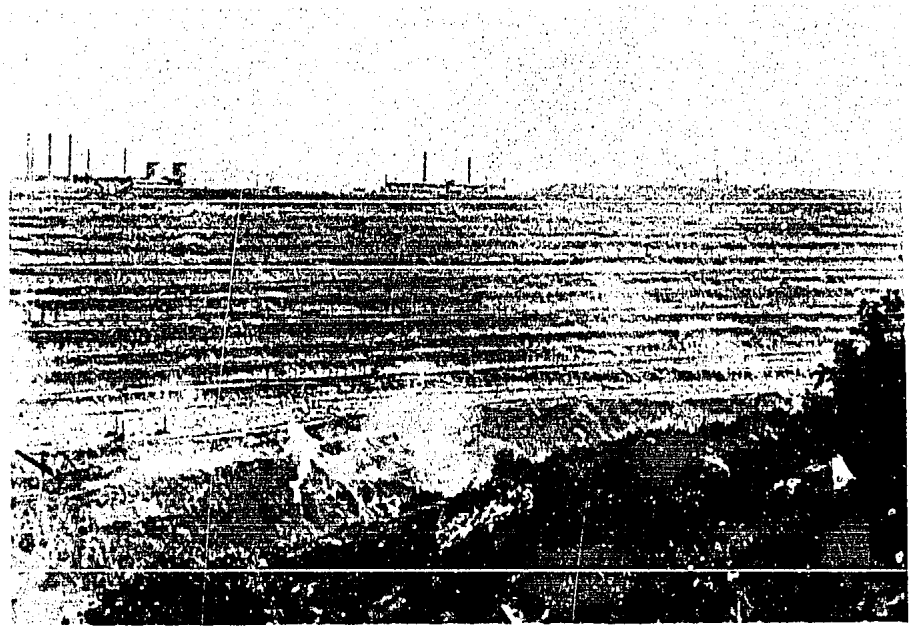


Figure 5. Large Strip Mine In Fu-shun, Liaoning Province

production is now pushing capacity. Most of the coal so far obtained from these old mines has been gained by picking over partly worked faces through labor-intensive methods; in other cases, new coal seams have been discovered and exploited.

7. Several longstanding problems continued to plague the industry in 1970. The lack of timber for pit props, equipment breakdowns, and backlogged coal at mines caused by limited transport facilities are the most common reasons for production slowdowns. The Chinese are trying to solve these problems through innovation. Steel and sometimes concrete are being substituted for wood pit props. Tool shops and foundries are being built on mine sites to manufacture replacements for wornout machinery and equipment. More attention is being given to the minimizing the distances between mines and consumers.

8. In any case, increases in output of the magnitude achieved in the past two years almost certainly will not be repeated within the next few years. As indicated in the following sections of this memorandum, there are grounds for believing that output at the large mines -- which account for most of Chinese production -- is now pressing the limits of capacity.

Development Policy

9. Over the years, policy emphasis on the development of the coal industry has alternated between small and large mines. Following the failure of the Great Leap Forward, which had featured the opening of thousands of small primitive mines, China once more emphasized the development of modern mining complexes. These modern complexes usually required foreign equipment and technology, which, now that Soviet support was unavailable, had to be obtained elsewhere. During the early 1960s, therefore, China purchased small amounts of modern mining equipment from Britain, France, West Germany, Romania, Sweden, and Japan. The Chinese appear to have mainly used this imported equipment as the basis for developing the domestic mining machinery industry. These imports halted in 1966 with the outbreak of the Cultural Revolution. The political turmoil of the Cultural

Revolution slowed down -- but did not completely stop -- the development of capacity and technology in the industry.

10. With the waning of the Cultural Revolution in 1969, the Communists began to expand the use of small mines. Small mines are found throughout China, but they are most prevalent in the southern provinces where reserves of both anthracite and bituminous coal are less plentiful and of lower quality.* By early 1969, both provincial and national press media began reporting the construction and opening of numerous small coal mines throughout China. This marked a definite policy change from the preceding eight years. To meet immediate needs for greater quantities of coal, the Chinese have since appeared to be more intensively exploiting the existing large mines and building small mines. Increases in the reported number of small mines sometimes are quite high. For example, in Chekiang Province during 1970, 800 small coal mines were opened in four counties within a six-month period. Much of this "new" small-mine construction is simply the reopening of mines that were abandoned after the collapse of the Great Leap Forward.

11. Those communes or production brigades which build new small mines need little in the way of heavy initial infusions of capital, but they do profit from the technical assistance from workers and technicians sent from the large mining bureaus. Small mines are usually financed and administrated by counties, communes, or production brigades, and regulated by provincial authorities who provide inspection teams to evaluate construction methods and cut costs.

12. The particular advantages of small coal pits are their low capital requirements, speed of construction, and low use of transport. Nevertheless, the rate of production from many of these small pits falls rapidly after two or three years as supplies of coal at shallow depths are exhausted.

---

* *For data on the dominance of the northern coal-producing provinces, notably, Shansi, Hopeh, Shantung, Liaoning, and Heilungkiang, see the Appendix, Table 2.*

At this point the operators face a choice between shutting down or obtaining the mechanical equipment needed for continuing operations at greater depths. Thus the future of many of these coal mines will depend upon the ability of the communes or production brigades to finance the costs of such equipment and their calculation of the benefits which could accrue from such outlays. In a more industrialized economy such mining ventures probably would not be undertaken, because operating costs tend to be high and the quality of the coal tends to be low. In China, the labor cost of the ventures is minuscule because of the low opportunity costs for labor. The transport costs also will be low if the mines are being developed in coordination with small local industrial plants.

13. Small mines usually take one year or less to design, build, and put into production. Large mines normally take about four years to build. The large mines currently coming into production have taken six or seven years to complete because of the work stoppages during the Cultural Revolution. As indicated in Table 1, ten large mines with a total capacity of at least 4.25 million tons were completed in 1969. Nine have been reported completed in 1970, but the total capacity of large mines added in 1970 appears to have been less than in the previous year. Thus the rate at which new large mines are being opened may be slowing down. The Chinese claim that more mines were completed during the first eight months of 1970 than in all of 1969 seems to reflect the current emphasis upon small-mine development. More important, the additions to large-mine capacity equal only about 1% of total production; even a modest industrialization program would require greater additions to capacity.

14. Construction and modernization of large mines, which are still referred to as "the backbone of the coal industry," is not being abandoned by the regime. However, since the Cultural Revolution the Chinese have not been reporting new mines until their completion. Therefore, it is difficult to estimate how many starts have been made on new large mines. Modernization is continuing in some cases, with foreign assistance. Poland is presently

Table 1

Communist China: Newly Constructed Large Mines

	Bureau	Mine	Capacity (Thousand Metric Tons)
1969			
Anhwei	Huai-pei	Huai-pei	1,000
Hopeh	K'ai-luan	T'ang-shan	1,000
Hupeh	Unknown	Sheng-li	"Large"
Inner Mongolian Autonomous Republic	Unknown	Hai-tai-shan	"Large"
Kansu	Yao-chieh	Unknown	900
Kiangsi	Unknown	Tung-shan No. 1	"Large"
Kiangsu	Unknown	Chung-shan	300
Kiangsu	Unknown	Unknown	450
Kirin	Unknown	Yen-pien	"Large"
Liaoning	Chieh-fa	Hsiao-ming	600
Total		*10 mines*	*4,250+*

Table 1

Communist China: Newly Constructed Large Mines
(Continued)

	Bureau	Mine	Capacity (Thousand Metric Tons)
1970			
Honan	Ping-ting-shan	No. 6	900
Hopeh	Unknown	Cheng-feng	310
Hopeh	Unknown	Unknown	500
Inner Mongolian Autonomous Republic	Wu-ta	Wu-hu-shan	"Large"
Kirin	Liao-yuan	Unknown	450
Peking	Ching-hsing	Chia-chuang	"Large"
Peking	Ching-hsing	No. 1	650
Shensi	Unknown	Nan-k'ou	250
Sinkiang	Ha-mi	Unknown	"Large"
Total		*9 mines*	*3,060+*

helping China build coal-washing plants and is supplying drilling machines and other equipment.

15. Although similarities exist between current policies toward the coal industry and those of the Great Leap Forward era, the regime has undertaken more careful planning for the allocation of human and material resources within the coal industry. For example, the abandoned workings of small mines started during the Leap Forward frequently caused difficulty in the subsequent development of larger modern mines. Now the Chinese are trying to limit new small-mine construction to the areas where coal seams are thin and are apparently reserving the large coal seams for large-scale development. In 1958-59, most of these small mines were worked by peasants; this contributed to labor shortages which adversely affected the planting and harvesting of grain. Currently, local authorities are tasked with monitoring the man-hours spent in the small coal mines. When the communes or production brigades begin to neglect their primary duty of farming by spending too much time in coal mining, county or provincial authorities redirect them to the primary task of farming.

Consumption

16. From 50% to 60% of China's coal output -- chiefly that portion produced by the large mining bureaus -- is allocated to industrial uses, including the generation of electric power. About 75% of the electricity generated in China comes from thermal powerplants fueled by coal. The metallurgical industries also consume large quantities of coal, and most other industries depend on coal either as a raw material or as a fuel to provide steam for heat processing. Between 10% and 15% of China's coal output is consumed by the transportation sector, principally by the railroads. More than 90% of the locomotives used on Chinese railroads are steam-driven. Although diesel locomotives are being produced in increasing quantities, coal will remain the most important source of fuel for the railroads for many years. The household sector together with local handicraft industry uses roughly 30% of total coal output.

17. The development of small mines dovetails with the current policy of building up small industrial facilities in outlying cities and towns. The various local producers of iron and steel, machinery, fertilizer, cement, paper, and brick all use coal as a source of heat and power. In the case of local fertilizer plants, coal is used also as a raw material. The bulk of coal produced from small mines is consumed by this expanding "local industry."

18. At present, China has a shortage of coal, although it is not critical. The shortage is mostly felt in the household sector since industrial needs are served first. Complaints about shortages are more numerous from coal-deficient provinces in the south than from the major coal producing provinces of the north. "Self-sufficiency" and "stop transporting coal from the north to the south" are phrases often repeated in southern provincial radio broadcasts.

19. The nationwide drive to conserve coal has led to campaigns for technological improvement within various consumer industries. For example, in the fertilizer industry a new coal powder gasification oven was developed in 1970 for the production of synthetic ammonia. This oven uses 1 ton of coal to produce 1 ton of synthetic ammonia, whereas older ovens use 1½ tons of coal. The gasifier is of such simple construction and low cost that chemical fertilizer plants at the county and commune level can easily change over to its use. In other industrial plants, particularly those in southern areas where coking grade coal is scarce, anthracite coal briquettes have been used to cut down on the amounts of coke consumed. More generally, boilers at many electric powerplants and other industrial installations have been renovated in order to reduce coal consumption.

20. In the winter of 1970-71 the regime devoted an usual effort to its fuel conservation campaign. In December 1970 the office in charge of "warehouse inventory and practicing economy" of the State Planning Commission held a joint meeting in Hopeh with the Ministry of Commerce "to exchange experiences in conserving coal and firewood." All of the provinces and autonomous regions in

China were represented. The express purpose of the meeting was to educate the household sector in the significance of conserving coal and firewood through the use of improved cookstoves. Towns and cities located in coal producing areas were also admonished to use low-grade coal in the household and leave the high-grade coal for industry. The campaign appears to have succeeded; shortages were mild during the winter. The regime seems to be indicating to its people that coal for households is likely to remain in short supply for some time to come.

Trade

21. Communist China exports less than 1% of its annual coal production. China exports coking coal to North Korea and North Vietnam, although little coal has gone to North Vietnam for the past two years because North Vietnamese steel production has been halted by the war. China exports anthracite coal to Pakistan and Japan, with small amounts also going to Cambodia, Hong Kong, and Malaysia. Chinese credits for coal have been of importance to Pakistan since 1965 when Pakistan banned coal imports from India. Coking coal exports to Japan, which were stopped in 1968, may again be resumed.

25X1

22. Communist China imports coal from only one country -- anthracite coal from North Vietnam. This trade is advantageous for North Vietnam because it helps to alleviate the unfavorable balance of trade with China, and it is advantageous for China because the coal goes to the deficit areas south of the Yangtze River, thereby saving on transportation costs incurred in shipping coal from north China.

Prospects

23. With proven coal reserves of between 70 billion and 80 billion tons and with a huge, industrious labor force, Communist China would not seem to face serious problems in meeting its future needs for coal. The regime, however, cannot readily

eliminate the general tightness which now marks coal supply in China and, over the next five years, may periodically encounter difficulties in providing increased amounts of coal for use in the modern industrial sector. The specific goals of the new Fourth Five-Year Plan (1971-75) remain unknown; nevertheless, the regime almost certainly expects to achieve sizable increases by 1975 in the production of electric power, iron and steel, chemicals, nonferrous metals, and industrial machinery and equipment. Coal production is now at peak levels in China. Most of the high-quality coal required to support increased levels of industrial production will have to come from new large mines or further expansion of the existing mines. Present Chinese policy toward the coal industry apparently does not place high priority on large-mine development. Given a construction time of four years for bringing large mines into production, some change in policy -- perhaps including increased imports of foreign technology and equipment -- would seem to be required fairly soon.

24. The small-mine construction program will contribute little to the flow of coal needed for the expansion of modern industrial production. However, there are virtues in the program -- in particular, in its contribution to the program of small-plant industrialization currently under way in China. Furthermore, the small mines may eventually provide a means of alleviating the tightness which marks the supply of coal for the household sector. Produced from local deposits of coal with local labor power and intended for consumption by local industry, the output of the small mines minimizes the requirements for coal which otherwise could have to come from China's large mines. The regime appears to be carefully controlling the scope and pace of its small-plant industrialization program and attempting to insure that the coal requirements of these small plants do not exceed the capabilities of small-mine coal production. Thus the lessons of the Leap Forward era -- when small industrial plants became additional claimants on the supplies of coal normally intended for modern industrial use -- appear to have been taken into account in regime planning.

25. The problems of the coal industry in the next five years are thus the product of Chinese ambitions to speed up industrial development, now that the economy has settled back to regularized economic planning. They are largely problems of providing a sensible and orderly balance among supplies of fuels, raw materials, intermediate products, and finished goods. The care and planning that distinguishes current Chinese decisions on new industrial construction from those of the Leap Forward era suggests that the regime will make the necessary adjustments. Squeezes will be nonetheless inevitable and will hit the household sector hardest as expected under Communist-style planning.

Conclusions

26. Coal production in Communist China reached 300 million tons in 1970, regaining the previous peak level of 1959. Production from large mines, which operated at less-than-capacity levels in the late 1960s, was responsible for approximately 75% of output in 1970, with output from small mines accounting for the remainder. Production at the large mines is now pressing capacity, and increases in total output of the magnitude achieved in the past two years almost certainly will not be repeated within the next few years.

27. The current policy of the regime emphasizes the construction of small local mines using labor-intensive methods of coal extraction. This policy takes advantage of widespread coal deposits and China's abundant labor power. A similar policy during the Leap Forward created havoc in the industry, but the current policies are being more carefully planned and controlled in implementation and seem more likely to succeed. Coal from these small mines supports the operation of the hundreds of small factories which have proliferated under the regime's small-plant industrialization policies. Coal from the large mines, generally of higher quality, is chiefly consumed by modern industry and transportation.

28. Despite its huge reserves of coal, China could face problems in providing the coal required for industrial expansion during the new Fourth Five-Year Plan (1971-75). Current expansion of the industry is heavily oriented toward the development of small mines whose output will support the growing number of small local industrial plants. However, if the regime is to provide the increased amounts of coal needed in the modern industrial sector, it must also give more attention to the construction of and expansion of capacity at large modern mines. These mines involve a lead time of four years and there is little evidence so far that the regime is facing up to this part of the coal problem.

APPENDIX

Coal Production Estimate for 1966 and 1969-70

Chinese Communist claims for coal production usually are in terms of percentage increases for the country as a whole or for various provinces. Absolute figures are extremely rare. The last figure for national output -- 190 million tons -- was given for 1967 [redacted] Provincial figures [redacted] are the primary source of production estimates in this memorandum, while national data are used mainly as a cross-check. These reported increases are applied to previous figures to derive estimates. In cases where no percentage is given, there often is the statement that the "production plan" was completed. In this case it is assumed that the plan was set at least as high as the previous year and probably a few points higher. If the plan is reported as completed early, then further production is extrapolated from the time of completion to the end of the year. This extrapolation is modified when equipment breakdowns or other adverse factors are reported. In cases where no substantive statements are given for the province as a whole, production has been assumed to have increased very little if at all during that year. Production increases reported for various mining bureaus and individual mines in those cases were examined to estimate the output. In the rare cases where no reports on a province or its mines have been given, it is estimated that no increase in production was achieved. The rare cases are usually restricted to low-producing provinces and make little difference in the overall totals.

25X1

Table 2

Communist China: Estimated Coal Production by Province and Autonomous Region

	Million Metric Tons			1970 Increase Over 1969 (Percent)
	1966	1969	1970 a/	
Anhwei b/	13.7	14.7	17.5	19
Chekiang b/	0.2	0.2	0.7	250
Fukien b/	0.4	0.4	0.7	75
Heilungkiang	22.0	24.3	27.7	14
Honan	17.9	19.4	23.0	19
Hopeh and Peking	28.4	30.6	34.0	11
Hunan b/	3.8	3.4	5.2	53
Hupeh b/	1.8	1.8	3.6	100
Inner Mongolian Autonomous Region	4.5	7.0	7.5	7
Kansu and Ningsia	4.6	5.1	7.1	39
Kiangsi b/	5.6	5.7	7.0	23
Kiangsu b/	2.8	2.7	3.6	33
Kirin	10.3	10.0	12.4	24
Kwangsi b/	2.2	2.0	2.4	20
Kwangtung b/	2.2	1.9	3.8	100
Kweichow	4.7	6.2	6.6	6
Liaoning	36.8	39.8	51.1	28
Shansi	35.7	33.2	34.9	5
Shantung	14.4	19.5	30.8	58
Shensi	6.0	4.3	4.4	2
Sinkiang	1.8	1.7	2.0	18
Szechwan	12.0	9.0	9.1	1
Tibet	--	--	0.2	--
Tsinghai	1.9	2.2	2.4	9
Yunnan	6.6	8.0	9.7	21
Total	240.3	263.1	307.4	21

a. Preliminary.
b. Provinces referred to as the coal-deficient provinces "south of the Yangtze." Anhwei, Hupeh, and Kiangsu are divided by the Yangtze River, and only the southern portion of these provinces is included in the coal-deficient category.